

REMARKS

This is in response to the United States Patent and Trademark Office Action mailed on Jan. 7, 2004. By said office action, claims 1-7, 15, 18-21, and 30 - 47 were rejected. Claims 8-14, 16, 17, 22-29, and 48 – 99 had been previously withdrawn in response to Applicant's election.

Claims 1 - 7, 15, 18-21, and 30 - 47 were rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement.

Claims 1 - 5, 7, 15, 20, 21, 30, 31, and 33-36 were rejected under 35 USC 102(b) as being anticipated by Giesemann (US Patent 5,431,996).

Claims 1 – 6, 15, and 31- 36 were rejected under 35 USC 102(b) as being anticipated by US Patent 3,961,110, to Daigle et al.

Claims 1 – 6, 15, and 18 - 20 were rejected under 35 USC 102(b) as being anticipated by US Patent 4,929,495, to Stanislawczyk.

Claims 37 - 47 were rejected under 35 USC 103(a) as being unpatentable over Giesemann (US Patent 5,431,996).

Applicant respectfully traverses these rejections.

Claim Rejection - 35 USC 112, first paragraph:

The Examiner maintained that Applicant's previously presented amendment to claim 1 was not supported by the disclosure. Specifically, the examiner objected to the term "tunable". Thus, claim 1 has been newly amended, and the term "tunable" has been removed.

Furthermore, newly amended claim 1 recites a coating of "water glass," which derives support from the present application, page 11, lines 30 – 31, as follows:

"According to a preferred embodiment of the present invention, coating 20 comprises a silicate compound, for example, water glass."

Moreover, newly amended claim 1 recites increasing the specific weight by a controlled, predetermined factor, wherein the amendment "controlled" derives support from the present application, page 17, lines 7 – 10, as follows:

"According to a preferred embodiment of the present invention, the factor by which specific weight W is increased is predetermined by distance r of roller system 50. Additionally, distance r may be varied to control the increase in specific weight."

Additionally, newly amended claim 1 recites increasing the specific weight by a factor which is less than 7, deriving support from Figures 6, and 8, for nonwoven materials.

Furthermore, newly amended claim 1 recites maintaining a “perviousness” to the material, wherein the term “perviousness” derives support from the present application, page 10, lines 8 – 13, as follows:

“The sound absorbing article of the present invention is advantageous over presently known sound absorbers, because of a unique design which combines at least two physical effects of sound absorption: conversion of sound to friction and heat, as vibrating air molecules are forced through and interact with an internal structure of a pervious material, and conversion of sound to mechanical energy, as vibrating air causes a flexible sheet, stretched over supports, to vibrate.”

(Please note that the citation of page 10, lines 8 – 13 relates to two mechanisms, the first recited in newly amended claim 1, and the second recited in original claim 48, which has been withdrawn.)

Claim Rejection - 35 USC 102 - US Patent 5,431,996, to Giesemann:

Claims 1 - 5, 7, 15, 20, 21, 30, 31, and 33-36 have been rejected by the examiner under 35 USC 102(b) as being anticipated by Giesemann (US Patent 5,431,996). The Examiner felt that Giesemann teaches the coating of a composite article, formed of nonwoven natural cellulosic material, with water glass.

Reconsideration of these claims over Giesemann is respectfully requested.

To illustrate and characterize the differences between the present invention and Giesemann’s work, samples of products, the first, A-3, made according to the teachings of Applicants invention, as recited in newly amended claim 1, and the second, A-5, made according to the teachings of Giesemann’s are provided with a declaration under 37 CFR 1.132.

Giesemann relates to producing a construction element, which is “...completely anhydrous and hence, hard and stable and insoluble in water. Such waterproofness is important for an application such as external building panels.” (Example 1, Col. 6, lines 28-32.)

In order to achieve waterproofing, Giesemann teaches that “all the interspacings will be filled in the best case. If this is not the case, impregnating and

drying are repeated once again, using a more viscous suspension, if necessary.” (US Patent 5,431,996, Col. 6, lines 17-23.)

These properties may be appreciated by viewing sample A-5.

In contrast, the present invention, as recited in newly amended claim 1, and as illustrated in sample A-3, relates to a sound absorbing article, which is pervious. The pervious nature of the sound absorber is intrinsic to the teachings of the present application, for example, on page 10, lines 8 – 13, as follows:

“The sound absorbing article of the present invention is advantageous over presently known sound absorbers, because of a unique design which combines at least two physical effects of sound absorption: conversion of sound to friction and heat, as vibrating air molecules are forced through and interact with an internal structure of a pervious material, and conversion of sound to mechanical energy, as vibrating air causes a flexible sheet, stretched over supports, to vibrate.”

(Please note that the citation relates to two mechanisms, the first recited in newly amended claim 1, and the second recited in original claim 48, which has been withdrawn.)

Thus, the pervious sound absorber article of the present invention, as recited in newly amended claim 1, is clearly different from the water-proofed construction element of Gieseemann’s.

There are other important differences between the construction element of Gieseemann’s and the sound absorbing article of newly amended claim 1 of the present invention.

Gieseemann relates to producing a construction element, with a weight gain factor which approaches the maximum achievable, so as to have “...*inherent stability, bending tensile strength, and depending on the application, weather resistance.*” (Col. 1, lines 56 – 60.) In contrast, the sound absorbing article, as recited in newly amended claim 1, has a weight gain factor, which is less than 7, - clearly less than the maximum achievable of 9 or more, (See attached declaration under 37 CFR 1.132). At weight gain factors of less than 7, the sound absorbing article has a texture of a stiffened fabric, somewhat akin to starched linen. It is not hard, it may be easily bent, by hand, and it soaks up water. When soaked, it loses much of its stiffness.

Although both Gieseemann and the present application teach soaking a pervious material in a solution, for example, a water glass solution, to produce a significant weight increase and a change in texture, they arrive at very different characteristics

because of a difference in the extent of coating. Giesemann teaches that “all the interspacings will be filled in the best case. If this is not the case, impregnating and drying are repeated once again, using a more viscous suspension, if necessary.” (US Patent 5,431,996, Col. 6, lines 17-23.)

The present application, on the other hand, teaches a coating which is clearly less than the maximum that may be achieved, *by amending the process of Giesemann's, by adding a step*. For example, it teaches mechanically wringing the soaked pervious material, in a controlled manner, to control the amount of coating and ensure that it falls within a desired, predetermined range, which is below the maximum. In this manner, perviousness, which is an important property for sound proofing, is maintained.

Figs. A and B, on the next page, illustrate the amended process of the present invention and Noise Reduction Coefficient (NRC) values as a function of the weight gain factor, for sound absorbing articles.

Fig. A schematically illustrates the amended process, to control the amount of coating and ensure that it falls within a desired, predetermined range, which is below the maximum. It teaches using “a roller system 50, having first and second rollers 51 and 53, set with a spacing r between them, operative to wring out excess solution 48,” as described in Figure 2A of the present application.

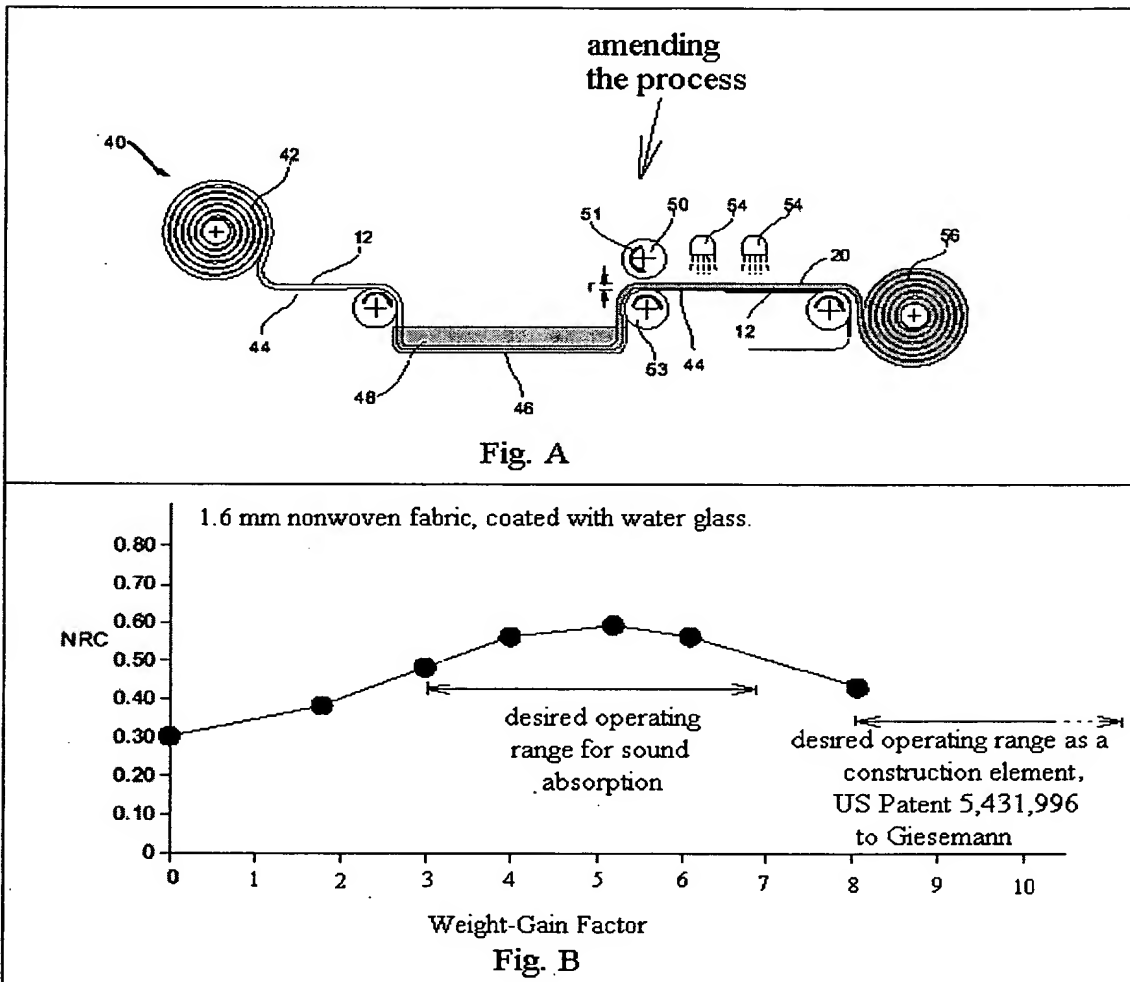
Fig. B schematically illustrates NRC values as a function of the weight gain factor. For a nonwoven material of 1.6 mm, soaked in water glass, a weight gain factor of 8 and more, may be achieved experimentally, but an optimal NRC value occurs at a weight-gain factor of just over 5, and NRC values greater than 0.50 occur between weight gain factors of about 3 and about 7, as described in Figure 6 of the present application. Thus, the desired operating range for the present application would be a weight gain factor of 7 or less.

Yet, the desired operating range for Giesemann's would be a weight gain factor of at least 9 and possibly more (by repeating the process), in order to achieve a product with “*inherent stability, bending tensile strength, and depending on the application, weather resistance.*” (US Patent 5,431,996, Col. 1, lines 56 – 60.)

In view of the foregoing remarks and explanations, and in view of the samples which are attached, and which illustrate the differences in texture and mechanical properties between the product of newly amended claim 1 of the present application and that of Giesemann's, it will be appreciated that the sound absorbing article of the

present invention is not anticipated nor rendered obvious by US Patent 5,431,996, to Giesemann.

The allowance of claim 1 and its dependent claims over Giesemann is respectfully requested.



Claim Rejection - 35 USC 102 - US Patent 3,961,110, to Daigle et al.:

Claims 1 – 6, 15, and 31- 36 were rejected under 35 USC 102(b) as being anticipated by US Patent 3,961,110, to Daigle et al., who teach impregnating a fibrous organic product with a fire-retardant material.

Reconsideration of these claims over Daigle et al. is respectfully requested.

While US Patent 3,961,110, to Daigle et al. teaches a polymeric coating to prepare a flame-resistant material, or a flame- glow- wrinkle- and shrink-resistant fabric, claim 1 of the present invention has been amended to recite a water-glass coating, which is not a polymer, for increasing the sound absorption property of the material.

It will be appreciated that the sound absorbing article of the present invention is not anticipated nor rendered obvious by US Patent 3,961,110, to Daigle et al.

The allowance of claim 1 and its dependent claims over Daigle et al. is respectfully requested.

Claim Rejection - 35 USC 102 - US Patent 4,929,495, to Stanislawczyk:

Claims 1 – 6, 15, and 18 - 20 were rejected under 35 USC 102(b) as being anticipated by US Patent 4,929,495, to Stanislawczyk, who teaches using an acrylate polymer for bonding together nonwoven material.

Reconsideration of these claims over Stanislawczyk is respectfully requested.

While US Patent 4,929,495, to Stanislawczyk teaches a carboxylated acrylate polymer coating for the bonding of non-woven fibrous materials, claim 1 of the present invention has been amended to recite a water-glass coating, which is not a polymer, for increasing the sound absorption property of the material.

It will be appreciated that the sound absorbing article of the present invention is not anticipated nor rendered obvious by US Patent 4,929,495, to Stanislawczyk.

The allowance of claim 1 and its dependent claims over Stanislawczyk is respectfully requested.

Claim Rejection - 35 USC 103(a) - US Patent 5,431,996, to Giesemann:

Claims 37 – 47, dependent from amended claim 1, were rejected under 35 USC 103(a) as being obvious over Giesemann. Specifically, the examiner stated that adjusting the amount of coating is relates to changing a result effective variable, which involves only routine skill in the art.

Reconsideration of these claims over Giesemann is respectfully requested.

Respectfully, Applicant wishes to point out that In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977), the court held that a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.

Giesemann does not recognize the extent of coating as a result-effective variable *for sound absorption*, because it does not relate to the sound absorption properties of its construction elements. Therefore, optimizing the sound absorption properties cannot be characterized as routine experimentation.

Moreover, there must be some suggestion or motivation, in Giesemann's disclosure, to perform the modification, namely to purposely coat the composite nonwoven material to less than the maximum achievable value. Yet, doing so would render Giesemann's invention inoperable, since the product would lack inherent stability, bending tensile strength, and weather resistance, as evident from sample A3, produced in accordance with the teachings of the present invention, and provided with the declaration under 37 CFR 1.132.

In fact, In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984), the court held that if a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.

Furthermore, there can be no reasonable expectation of success, to Giesemann's invention, in amending Giesemann's process, in a direction that is counter-productive for its intended purpose, by mechanically squeezing excess coating from the material, as taught by the present invention, in order to arrive at the limitations of newly amended claim 1 of the present invention.

Additionally, the Giesemann reference does not teach or suggest all the claim limitations, of the above-identified patent application, as recited in newly amended claim 1.

Specifically, Giesemann teaches that "*all the interspacings will be filled in the best case. If this is not the case, impregnating and drying are repeated once again, using a more viscous suspension, if necessary.*" (US Patent 5,431,996, Col. 6, lines 17-23.),

Yet newly amended claim 1 of the present application recites;

"so as to maintain a perviousness to said material."

It will be appreciated that the sound absorbing article of the present invention is not anticipated nor rendered obvious by US Patent 5,431,996, to Giesemann.

The allowance of claim 1 and its dependent claims over Giesemann is respectfully requested.

The allowance of Claims 1-7, 15, 18-21 and 31-42 is therefore deemed to be in order and such action is respectfully requested.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read 'Sol Sheinbein', written in black ink.

Sol Sheinbein

Registration No. 25,457

April 29, 2004

Experimental Sample A-3

The attached sample A-3, which is intended to illustrate a product, made in accordance with the newly amended claim 1 of the present invention, is of a nonwoven 5-mm thick, 375 gm/m² cotton, coated to a weight gain of factor of 3.6, and has a sound absorbing NRC value of 0.88, which is considered very high.

Experimental Sample A-5

The attached sample A-5, which is intended to illustrate a product, made in accordance with the teachings of US Patent 5,431,996, to Gieseemann, is of a nonwoven 5-mm thick, 375 gm/m² cotton, coated to a weight gain of factor of 9, and has a sound absorbing NRC value of 0.13, which is very low.